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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/643,925	08/20/2003	Hiroyuki Yamada	056205.48558C1	4766

23911 7590 02/22/2007  
CROWELL & MORING LLP  
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WASHINGTON, DC 20044-4300

EXAMINER
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MILLER, CARL STUART

ART UNIT	PAPER NUMBER
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3747

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/22/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/643,925

Applicant(s)

YAMADA ET AL.

Examiner

Carl S. Miller

Art Unit

3747

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 11-14, 26 and 28-35 is/are pending in the application.
- 4a) Of the above claim(s) 31-34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-14, 26, 28-30 and 35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

Claims 31-34 remain withdrawn from consideration as drawn to non-elected species of the invention. The applicant should note that Claim 31 in particular does not appear to read on the elected species of Figure 11.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 11-13, 26, 28-30 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kraemer in view of Wilber.

Kraemer, as noted in earlier office actions, teaches a fuel injection pump with all of the applicant's claimed features except the second spring biasing the holder in the outward position and thereby causing the inlet valve to be held open. While this feature is not taught by Kraemer, the mechanism is held open by some manner since the activation of the solenoid appears to retract the holder, thereby allowing the check valve to close.

Wilber (UK('941)) teaches a check valve that includes a ball valve biased by a first spring and a larger spring that biases a holder in a direction to hold the check valve open. The solenoid is used to overcome the bias of the second spring and allow the check valve to close.

It would have been obvious to modify Kraemer by constructing the check valve as taught by Wilber because the latter valve was also used as an injection timing device

Art Unit: 3747

by allowing fluid to be released from a timing chamber as opposed to the pumping chamber

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kraemer and Wilber as applied to claim 11 above, and further in view of Yasuhara.

Yasuhara teaches the use of an injection pump inlet solenoid valve that does not set the beginning of injection, but instead closes at a fixed time. This is possible because the timing is set by rotation of the pump cam mechanism

It would have been obvious to modify Kraemer by using the inlet solenoid to set only the end of injection since it was known in the art to use other means to set the beginning of injection even in a system having a solenoid-controlled inlet.

Applicant's arguments filed 5/03/06 and 12/01/06 have been fully considered but they are not persuasive. In particular, the examiner has again reviewed applicant's comments regarding the Kraemer reference and does not find them convincing. The tappet of the Kraemer device is the equivalent of applicant's large spring that acts to hold the inlet valve open by forcing the holder element against the smaller spring. When the solenoid is actuated the holder is withdrawn to allow the valve to close. The missing element in Kraemer is the second spring that forces the valve open. Kraemer discloses a tappet, but does not show the details of that tappet. Clearly, something associated with the tappet must force the smaller spring into compression in order to hold the valve open. A larger spring is one way that the tappet could function as disclosed. It is, admittedly, not the only way to keep the tappet expanded. If it were the only way to

Art Unit: 3747

keep the tappet expanded then the reference would inherently included both springs and the reference would anticipate at least some of the claims now rejected under 35 USC 103.

With regard to applicant's arguments against the applicability of Wilber, it should be noted that based on clear teachings of Kraemer (noted above) the primary reference is only missing a showing of the details of the tappet and is not missing any of the functional limitations of the intake valve. Even the structural limitations now added to Claim 35 are taught by Figure 5 of Kraemer in that the "electromagnetic driving mechanism" may be considered all of element (28) except the pin itself. How the valve (26) in Wilbur responds to the opening and closing of the valve (28) is not relevant to the application of the secondary reference because the latter reference is only being used to teach that it would have been obvious to use a larger spring to keep the valve open absent the flow of current to the solenoid. The larger spring and the holder (100) act as the tappet of Kraemer would act if the details of the tappet were shown. Finally, the motivation to look to the teachings of Wilber is found in the fact that the tappet of Kraemer is only schematically shown and that the valve of Wilber is being used to control (at least in part) fuel injection pump timing.

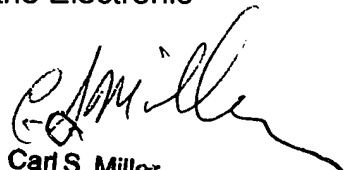
**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carl S. Miller whose telephone number is 571-272-4849. The examiner can normally be reached on MTWTHF.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Cronin, can be reached on 571-272-4536. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Carl S. Miller  
Primary Examiner